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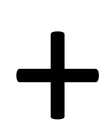
HOW TO EVALUATE SUSTAINABLE SOLUTIONS FOR POST DISASTER BUILDINGS

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2 Major Problems

Buildings with the
biggest
responsible of the
pollution



Numerous buildings
damaged by
disasters

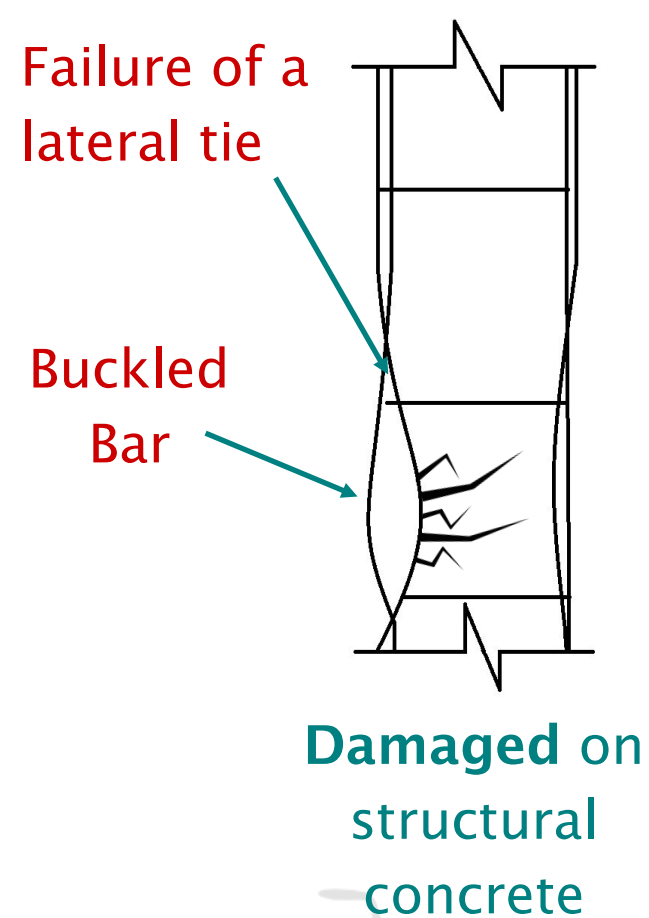
1 solution

Besides the structural strengthening of
damaged building, taking into account
its environmental, social and cost
impacts.

The Numbers of Damaged or Destroyed Buildings[1]

			
Turkey, 1999. 154,000	Haiti, 2016. 200,000	Indonesia, 2004. 200,000	US, 2011. 1,800
Japan, 2011. 370,000	US, 2005. 275,000	Pakistan, 2010. 1,600,000	Australia, 2009. 2,050
Nepal, 2015. 900,000	Philippines, 2013. 1,080,000	US, 2003. 3,650	

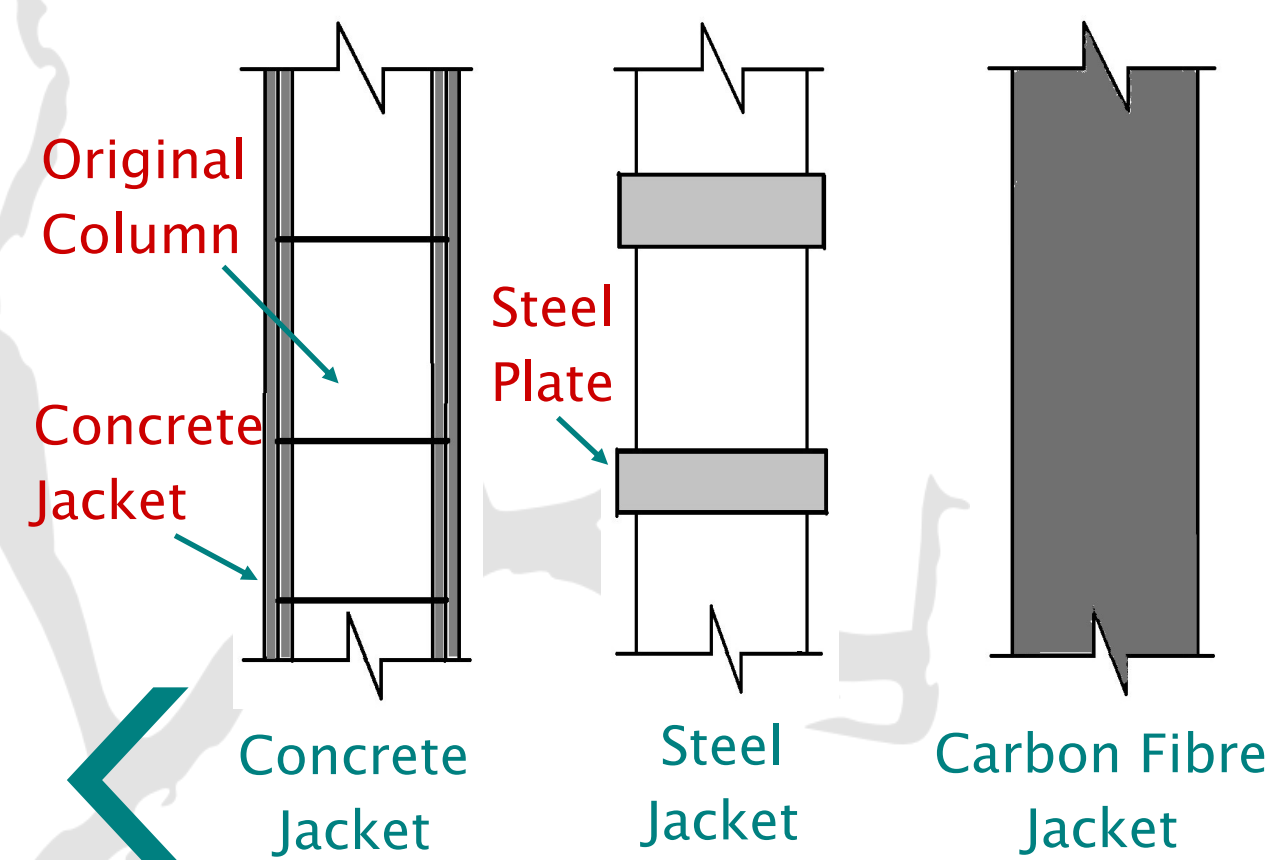
HOW TO MAKE EARTHQUAKE-DAMAGED BUILDING SAFER



Strengthening of buildings includes:

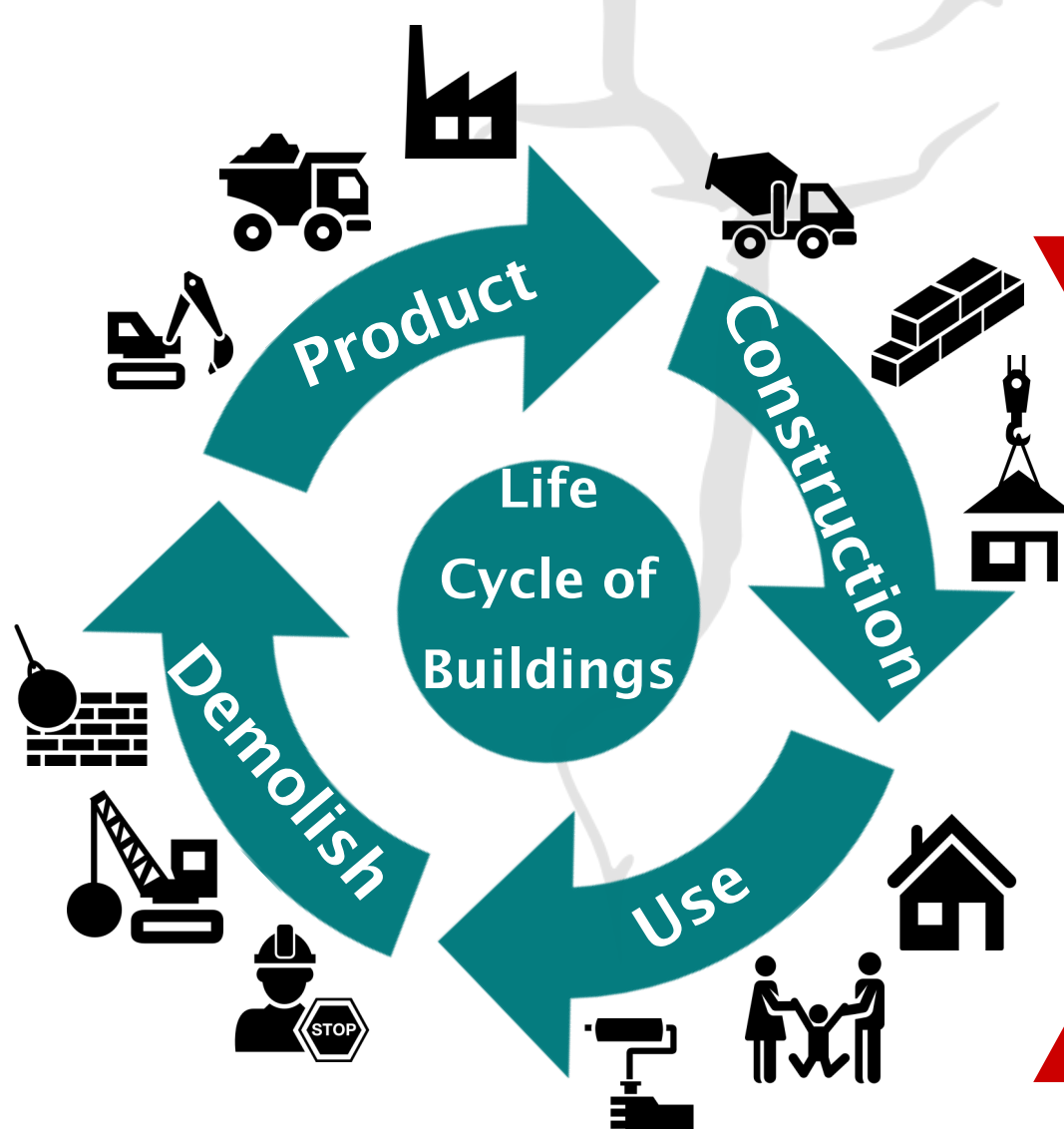
- Strengthening of existing elements
- Addition of new elements,
- Continuity of force transfer.

3 strengthening options
for earthquake damages



HOW TO CONTINUE THE SUSTAINABILITY CRITERIA AFTER DISASTER

Life cycle
Assessment
methodology is
chosen to
achieve
sustainable
strengthening
design.



Life Cycle Impacts of the Strengthening Options

Environmental	Social	Cost
<ul style="list-style-type: none">• Natural resource depletion• Energy and water consumption• Emissions	<ul style="list-style-type: none">• Architectural quality and aesthetics• Time and noise• Health and safety of users• User satisfaction	<ul style="list-style-type: none">• Raw materials, transformation process• Mechanical equipment• Repair, demolition and waste

Conclusion

This integrated approach can be
adopted for many buildings
damaged from various kinds of
disasters when choosing the best
structural strengthening option
in accordance with
sustainability.

The **target** post-disaster building of the study is:

